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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Ahmad Jalali

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02/03/2005

Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
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EXAMINER

TSEGAYE, SABA

ART UNIT

PAPER NUMBER

2662

DATE MAILED: 02/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/943,277

Applicant(s)

JALALI, AHMAD

Examiner

Saba Tsegaye

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14-19, 21-29 and 31-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3-11, 14, 15, 29 and 31-37 is/are allowed.
- 6) ☒ Claim(s) 2, 16-19, 21-28, 38 and 39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed 06/10/04. Claims 1-11, 14-19, 21-29 and 31-39 are pending. Claims 1, 3-11, 14, 15, 29 and 31-37 are allowed. Claims 2, 16-19, 21-28, 38 and 39 are rejected.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the **memory storage unit and storage medium coupled to the first processor (as in claims 17, 27, 34, 35)** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified

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and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Lines 4 and 7 respectively, the phrase "said received reference data and the reference data" is confusing.

Claim Rejections - 35 USC § 103

5. Claims 16-19 and 21-26, are rejected under 35 U.S.C. 103(a) as being unpatentable over Citta et al. (US 5,260,793) in view of Sadri (US 6,621,808).

Regarding claims 16, 23 and 26, Citta discloses, in Fig. 1, an apparatus for pre-coding in a communication system comprising (column 2, lines 54-56; column 5, lines 38-52):

a pre-coder configured to pre-code first reference data 11 in accordance with the determined pre-coder parameters 17;

a first transmitter 27 communicatively coupled to the pre-coder 17 configured to:

transmitting (27) the pre-coded first data (column 3, lines 40-66); and

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transmitting non pre-coded second reference data 15 (pilot signal) (as in claims 1 and 23) (column 3, lines 40-50). Further, Citta discloses (the first data **comprise**) a dedicated pilot data 13 (as in claim 26), a MUX 21 and a modulator 25. The Multiplexer multiplexes the pilot signal with the pre-coded reference data and a pre-coded payload data.

However, Citta does not expressly disclose the non-pre-coded first reference data on a common pilot signal, wherein the common pilot signal is sent on a separate channel from the preceded first data.

Sadri discloses, in Fig. 2D, an encoder 110, a modulator 1112, a MUX 116 and a dedicated pilot channel 114. The Multiplexer multiplexes the pilot signal with the data symbols in a series of data frames (see fig. 1). The dedicated pilot channel is used to signal the mobile station or the base station to reconfigure (column 5, line 40-column 6, line 22).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use a common pilot signal which is sent on a separate channel, such as that suggested by Sadri, in the transmitting of non-pre-coded first reference of Citta in order to facilitate re-generation of the carrier in the receiver and allows user carriers to share the common pilot signal for carrier phase reference.

Regarding claim 17, Citta discloses, in Fig. 5, the apparatus, further comprising:

a first receiver (11) communicatively coupled to the pre-coder (17) configured to receive a reference data;

a first processor communicatively coupled to the first receiver(11, 17) (column 1, lines 54-60); and

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a storage medium communicatively coupled to the first processor (17) and containing a set of instructions executable by the processor (column 1, lines 54-60) to:

determine the pre-coder parameters in accordance with the received reference data and the reference data (column 3, lines 50-66).

Regarding claims 18 and 19, Citta discloses a second receiver (12) configured to receive the non pre-coded second reference data (column 4, lines 51-56);

a second processor communicatively coupled to the second receiver (column 4, line 51-column 5, line 38);

a storage medium communicatively coupled to the first processor and containing a set of instructions executable by the processor to (column 4, line 51-column 5, line 38):

determine the pre-coder parameters in accordance with the received pre-coded first reference data and the non pre-coded second reference data (column 4, line 51-column 5, line 38). Further, Citta discloses that a linear post coder circuit 12, configured in complementary relationship to the transmitter modulo N pre-coder, comprises a feed forward circuit including a delay 14 and a linear adder 16. Citta does not expressly disclose a second transmitter communicatively coupled to the second processor configured to transmitting the determined pre-coder parameters.

Sadri teaches, in Figs. 2c and 2d, a second receiver (150), a second processor (164, 162, 166, 182, 184, 186) and a second transmitter (180) (column 5, line 62-column 6, line 36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second transmitter, such as that suggested by Saints, in the system of Citta.

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One of ordinary skill in the art would have been motivated to do this because a second transmitter would maintain connectivity between a base and a mobile station.

Regarding claims 21 and 24, Citta discloses the method wherein the reference data are continuous reference data (column 3, lines 50-53).

Regarding claims 22 and 25, Citta discloses the apparatus wherein the first transmitter is further configured to transmit the non pre-coded first reference data discontinuously (column 3, lines 56-61).

6. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Citta et al. (US 5,260,793) in view of Saints (US 5,903,554).

Regarding claim 38, Citta discloses, in Fig. 1, a method for pre-coding in a communication system, the method comprising:

pre-coding predetermined data (17) in accordance with a set of pre-coder parameters (17) to obtain a first pilot (11) burst of pr-coded predetermined data (17);

transmitting over a communication link (27) the first pilot burst (11) to a destination station (12);

transmitting over the communication link (27) a second pilot burst (15) to the destination station (12), wherein the second pilot burst comprises non-pre-coded predetermined data (column 3, lines 41-66).

However, Citta does not disclose the pre-coded reference data is a first pilot signal.

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Saints teaches a pre-coded pilot signal (57, 55).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to use the teachings of Saints of pre-coding a pilot signal in the system of Citta in order to provide a high quality of pilot signal.

Regarding claim 39, Citta discloses a second receiver (12) configured to receive the non pre-coded second reference data (receiving an estimate of characteristics of the communication link) (column 4, lines 51-56); and adjusting the set of pre-coder parameters in accordance with the estimate (column 4, lines 56-65).

7. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Citta in view of Sadri as applied to claim 16 above, and further in view of Chung (US 4,995,057).

Citta in view of Sadri discloses all the claim limitations as stated above. Further, Citta an equalizer 71 and a means for storing a plurality of calculated IRF coefficients corresponding to respective ones of the plurality of transmitter. However, Citta in view of Sadri does not expressly disclose a processor communicability coupled to the at least two equalizers.

Chung discloses, in Fig. 3, equalizer 380, 381 and sampler 384 (column 3, lines 13-21; column 6, lines 35-67; column 8, line 64-column 9, line 11).

It would have been obvious to one ordinary skill in the art at the time the invention was made to use more than one equalizer, such as that suggested by Chung, in receiver of Citta in

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view of Sadri in order to optimize the quality of data and to assure the noise at the input to the receiver decoder is both Gaussina and white.

Response to Arguments

8. Applicant's arguments with respect to claims 1-11, 14-19, 21-29 and 31-39 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

9. Claim 2 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. Claims 1, 3-11, 14, 15, 29 and 31-37 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saba Tsegaye whose telephone number is (571) 272-3091. The examiner can normally be reached on Monday-Friday (7:30-5:00), First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ST

January 28, 2005



JOHN PEZZLO
PRIMARY EXAMINER